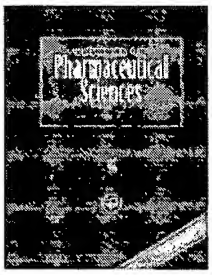

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Research Article

Viscosity of xanthan gum solutions at low shear rates

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KEYWORDS

Viscosity - xanthan gum in aqueous solutions, low shear rates, effect of added salts • Xanthan gum - aqueous solutions, viscosity at low shear rates, effect of added salts • Shear rate - low range, viscosity of xanthan gum in aqueous solutions, effect of added salts

ABSTRACT

The viscosity of xanthan gum solutions in the low shear region was investigated with the aid of a Couette instrument. All solutions were highly pseudoplastic. Solutions containing 0.3-0.5% of the gum exhibited a highly ordered phase at very low shear. Viscosity, the degree of pseudoplasticity, and the value of the transition from soft gel to pseudoplastic behavior were directly related to gum concentration. The effect of the addition of a salt on viscosity depended on the xanthan gum concentration. The viscosity of a 0.3% xanthan gum solution was practically unaffected by the salts. Higher gum concentrations exhibited a viscosity increase when salt was present. Concentrations >0.3% exhibited a viscosity decrease in the presence of a salt. All viscosity effects seemed to reach limiting values at $\sim 10^{-3}$ to 3.3×10^{-3} *N* salt. No major differences were observed between sodium chloride, calcium chloride, and sodium citrate in their influence on xanthan gum viscosity.

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